

**AMENDMENTS TO THE CLAIMS:**

The following claims will replace all prior claims in the application. Kindly cancel claims 1, 4 and 12, and amend claims 2, 5, 7-11 and 13 as follows:

**Listing of Claims:**

1. (canceled)
2. (currently amended) The A method of claim 1 tangibly embodied on or in a memory for deriving barycentric coordinates for a point  $p$  within an  $n$ -sided polygon, wherein, for a particular coordinate  $w_j$ , corresponding to a vertex  $q_j$ , the method embodies a formula which may be expressed as follows:

$$w_j = \frac{\cot(\gamma_j) + \cot(\delta_j)}{\|p - q_j\|^2}$$

where  $\delta_j$  and  $\gamma_j$  are adjacent angles to the edge  $pq_j$  at the vertex  $q_j$ .

3. (original) The method of claim 2 wherein a series of instructions or program code embodying the method is stored in a memory.
4. (canceled)
5. (currently amended) The A method of claim 4 tangibly embodied on or in a memory for deriving weights  $w_{ij}$  for expressing a vertex  $q_i$  in a mesh representation of an object surface in terms of its one-ring neighbors  $q_j, \forall j \in N(i)$ , wherein, for a particular weight  $w_{ij}$ , corresponding to a vertex  $q_j$ , the method embodies a formula which may be expressed as follows:

$$w_{ij} = \frac{\cot(\gamma_j) + \cot(\delta_j)}{\|q_i - q_j\|^2}$$

where  $\delta_j$  and  $\gamma_j$  are adjacent angles to the edge  $q_iq_j$  at the vertex  $q_j$ .

6. (original) The method of claim 5 wherein a series of instructions or program code embodying the method is stored in a memory.
7. (currently amended) A processor readable medium tangibly embodying a method of parameterizing a mesh representation of an object surface, the method comprising the steps of:  
for one or more vertices  $\mathbf{q}_i$  of the mesh representation, computing for one or more of its one-ring neighbors  $\mathbf{q}_j$ ,  $\forall j \in N(i)$ , a weight  $w_{ij}$  in accordance with the following formula:

$$w_{ij} = \frac{\cot(\gamma_j) + \cot(\delta_j)}{\|\mathbf{q}_i - \mathbf{q}_j\|^2}$$

where  $\delta_j$  and  $\gamma_j$  are adjacent angles to the edge  $\mathbf{q}_i\mathbf{q}_j$  at the vertex  $\mathbf{q}_j$ ; and  
responsive to one or more of the weights  $w_{ij}$  determined in the foregoing step,  
determining the parameterized coordinates of one or more of the vertices of the mesh representation.

8. (currently amended) The ~~method~~ medium of claim 7 wherein the method further ~~comprising~~ comprises fixing the positions of one or more boundary vertices in parameter space.
9. (currently amended) The ~~method~~ medium of claim 8 wherein the method further ~~comprising~~ comprises assigning each of these vertices a position on a fixed boundary  $C$ , where the position on the fixed boundary  $C$  assigned to a vertex  $i$  may be referred to as  $\mathbf{C}_{u_i}$ .
10. (currently amended) The ~~method~~ medium of claim 9 wherein the method further ~~comprising~~ comprises solving the following system of linear equations in order to derive the parameterization of the mesh representation:

$$\forall i, i \in [1 \dots n], \left\{ \begin{array}{ll} \sum_{j \in N(i)} w_{ij} (\mathbf{u}_i - \mathbf{u}_j) = 0 & \text{if } i \text{ is an interior vertex} \\ \mathbf{u}_i = \mathbf{C}_{u_i} & \text{if } i \text{ is a boundary vertex} \end{array} \right\}$$

where  $\mathbf{u}_i$  is the vertex  $i$  in parameter space (and  $\mathbf{u}_j$  is the vertex  $j$  in parameter space), and  $\mathbf{C}_{u_i}$  is the boundary position in parameter space assigned to the boundary vertex  $i$ .

11. (currently amended) A processor readable medium tangibly embodying a method of parameterizing a mesh representation of an object surface, the method comprising the steps of:
- a step for computing, for one or more vertices  $\mathbf{q}_i$  of the mesh representation and one or more of its one-ring neighbors  $\mathbf{q}_j$ ,  $\forall j \in N(i)$ , a weight  $w_{ij}$  in accordance with the following formula:

$$w_{ij} = \frac{\cot(\gamma_j) + \cot(\delta_j)}{\|\mathbf{q}_i - \mathbf{q}_j\|^2}$$

where  $\delta_j$  and  $\gamma_j$  are adjacent angles to the edge  $\mathbf{q}_i\mathbf{q}_j$  at the vertex  $\mathbf{q}_j$ ; and

a step for determining, responsive to one or more of the weights  $w_{ij}$  determined in the foregoing step, the parameterized coordinates of one or more of the vertices of the mesh representation.

12. (canceled)

13. (currently amended) The medium of ~~claim 12~~ any of claims 7-11 wherein the method is embodied as instructions or program code stored in a memory.

14. (previously presented) The medium of claim 13 wherein the memory is selected from the group comprising RAM, ROM, PROM, EPROM, EEPROM, hard disk, floppy disk, CD-ROM, DVD, and flash memory.